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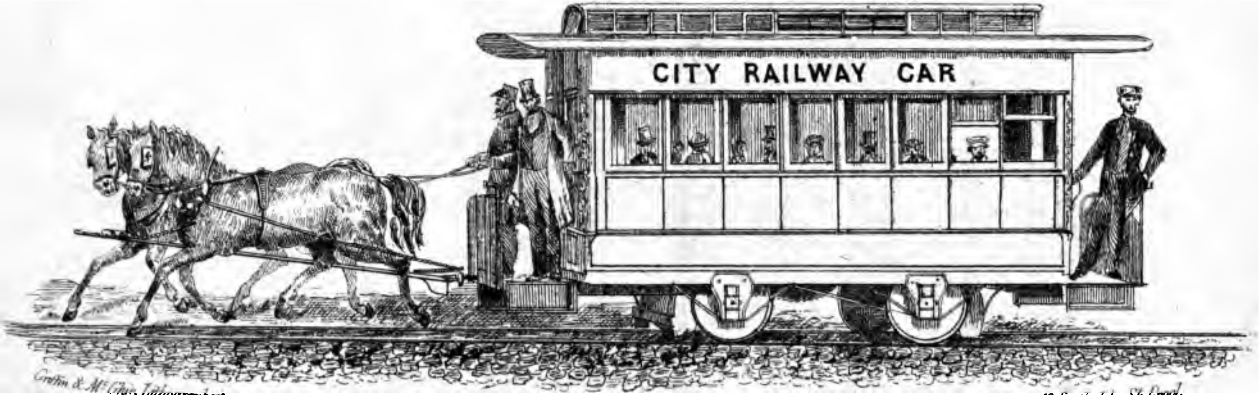

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AMERICAN PASSENGER CAR.

OBSERVATIONS

ON

HORSE RAILWAYS,

BY

GEORGE FRANCIS TRAIN,

ADDRESSED TO THE

RIGHT HON. MILNER GIBSON, M.P.,

PRESIDENT OF THE BOARD OF TRADE

LONDON.

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Lord John Manners said, he did not take the same view as Sir Benjamin Hall did, that it was the duty of that office to interfere in any way with the paving of the streets of London.

Mr. Hawes would take the liberty of asking his lordship which department of the Government he considered such a subject referred to?

Lord John Manners: As Chief Commissioner of Public Works, he thought his was not the office. The more proper department, this being a commercial matter, he thought would be the Board of Trade.—*Vide Observer, March* 14, 1858. Deputation from the Metropolitan Parishes to Lord John Manners.

28-36

Transport.

OBSERVATIONS ON HORSE RAILWAYS,

BY GEORGE FRANCIS TRAIN.

TO THE RIGHT HONOURABLE MILNER GIBSON, M.P.

The age of Omnibuses in crowded cities has passed. The age of Horse Railways has commenced.

America has introduced the new invention of relieving crowded streets, by giving additional facilities for travel; and, as Europe must sooner or later, adopt a similar system, I make bold to address you, as President of the Board of Trade, a few comments connected therewith.

While on a recent visit to the United States, I was surprised to find the progress made in what the Americans term *Horse Railways*, the English *tramways*, and the French *chemin de fer Americain.* In the cities of Boston, New York, Philadelphia, Baltimore, St. Louis, and Cincinnati, the railway cars were displacing omnibuses in all the large streets. Like all practical labour-saving inventions, the people first oppose then advocate them. They have already become a public utility; and Americans would miss their railway-car as much as the English would their penny-postage system. The horse railway is a fixed fact. It has had a fair trial, and has met with striking success.

The Horse Railway is creating, and will continue to create, the same revolution in large cities that the telegraph on the land, and the electric cable under the ocean has done in commerce.

As the locomotive supersedes the stage-coach on the shore, and the steam-boat displaces the sailing vessel on the sea, so will Horse Railways make omnibuses give way to the force of progress.

The railway from Liverpool to Manchester, in your recollection, astonished the world. Now there are seventy thousand miles! Brunel's genius progressed from the Great Western of 2,000 tons to the Great Eastern of 20,000 tons in twenty years! Now a thousand steam-boats connect the mother land with her colonial children, as the arteries carry life from the heart.

England, first in iron railing the country with steam, is last in iron railing the city with horse-power. But the enterprise that stimulated the Thames Tunnel, the Tubular Bridge, the Crystal Palace, and Great Eastern, will not long submit to the miserable steam-packets from England to France, ferry-boats from Liverpool to Birkenhead, or to omnibuses blockading the leading city thoroughfares. The latter enterprises, I am confident, on the improved system, would prove as great financial successes as the former have financial failures.

This paragraph, from the *Times*, shows that Ireland is wide awake on the subject, while England sleeps:—

IRISH TRAMWAYS.—As there is now no doubt but that the bill of Sir Robert Ferguson will become law in the course of the ensuing session of Parliament, a prospectus has been issued of the City of Dublin and Suburbs Tramway Company, under the Limited Liabilities Act. A very flourishing account is embodied in the preliminary notice of the success of tramways in New York, chiefly founded on the statistics supplied by the correspondent of the *Times*, in New York. It is proposed that the capital of the Dublin Company should be £100,000, in £10 shares, to be paid as wanted; to run five lines of four miles each through the suburbs, centering in the business part of the city, and connecting the railways and quays.

The Irish journals are fully alive to the importance of Sir Robert Ferguson's bill. Will England and Scotland allow Ireland to take the lead, or rather will not Parliament pass a general bill for the kingdom?

The advantages of Horse Railways over Omnibuses are so well set forth, by Alexander Easton, C.E., of Philadelphia, in "*A Practical Treatise on Street or Horse-power Railways*" that the following Extract will be of interest:—

Popular prejudice is the great enemy with which the advocates of innovation have had to combat, and strange as it may appear, it is nevertheless practically true, that the more useful the measure advocated, the greater has been the amount of opposition brought to bear against it, even by parties who have subsequently been benefited by the very measures they sought to defeat.

A glance at the early history of turnpike roads will clearly show the difficulties encountered by their projectors; but which, when overcome, became the favored improvement of the age, and legislative halls sounded with angry debate for their protection, so soon as railroads were proposed, denouncing them as a nuisance, and their corporators as visionary speculators. So it was with the introduction of canals, steam-boats, and even gas, the arguments against which, brought forward by the opposition having, in each instance, exhibited the grossest ignorance of science, and of the practical effect of the proposed improvements, all of which is applicable at the present day, and has been experienced by those who proposed the introduction of street railways.

The interest which operated against turnpike roads was that of the muleteer; the interest which operated against railroads was that of stage coach and wagon proprietors, and in the case of street railways the opposition is from omnibus companies and antiquated stage communities, whose palpable interest it is to defeat a measure, which invades their imagined rights, by the substitution of a means of communications so manifestly useful and necessary, as to completely destroy the system to which they are so faithfully wedded. They use the means employed in their interests to influence, and lead on opposition, until having obtained certain provisoes in the charter for their *especial* benefit; the time has arrived to fraternize with the enemy—when they at once become strong advocates for street railways; and unfortunately, without the influence to quench the flame of prejudice which they have ignited.

* * * * * * *

That increased facilities for commerce and transportation cause greater influx of traffic and travel to the principal streets of large cities, is indisputably recognized, and where the consequent inconvenience of narrow thoroughfares cannot be corrected, it must be modified by economizing time and space.

Time is economized by regularity of transit; the cars being quickly stopped by the application of the brake, the most refractory horses are immediately arrested; while the whole operation becomes so mechanical, that the horses, when accustomed to the signals of the bell, stop or start without any action on the part of the driver, by which means a time table can be effectively used, and business men are not subjected to delays incident to the old—and we trust soon to say obsolete—*omnibus system.*

Space is economized, because omnibuses, (the most numerous and dangerous portion of the travel,) surging from side to side of the streets, are abolished, while the work heretofore inadequately performed by three of those vehicles, is easily accomplished by one car, in half the time, notwithstanding it is concentrated and confined to one channel.

By the convenience afforded the public by the cars, the sidewalks are relieved from pedestrians, and the centre of the street from vehicles; a seat can be taken and vacated without trouble or danger to the occupants of the car, whether invalid or infirm, and the rails present such an even and smooth surface for the wheels of ordinary vehicles, that the drivers avail themselves of their continued use. It is a most difficult matter to dispel from the ignorant or prejudiced mind, the idea, that the railways will be constantly occupied by continuous trains of cars, which beyond a doubt would block up the street, obstruct the travel, and be a most confirmed nuisance, ruinous to the locality; whereas in reality the rails themselves form no obstruction, but rather invite vehicles on the track; the passage of the little car is momentary, as it moves quietly along the street; and the nuisance occasioned by the rattling of omnibuses over the rough stones is abolished, leaving the streets nearly as noiseless as when covered with snow; the advantages of the smooth rail, are thus neither few nor unimportant. Any one, familiar with the laws of momentum, can readily understand the effect of the constant jar to buildings, occasioned by the passage of omnibuses, and particularly in the thronged thoroughfares, where buildings are most elevated.

If, however, the solidity of construction should prevent injurious results, there are many minor disturbances—if not so dangerous, almost as annoying —which cannot be prevented, such as the constant vibration of pier-glasses, gas pipes, &c., (as occasional showers of white flakes, and plaster fragments attest,) without enumerating the very serious annoyance to the invalid.

The great reduction of friction on the car, and the smoothness of the rail, obviate all these evil effects by removing the cause.

Here is a picture. A wet day—every corner of the side walk crowded with impatient pedestrians, each one anxiously peering up or down the street in search of the particular omnibus among the fifteen or twenty approaching, to carry him home, which with as many more coming in the opposite direction, so effectually choke up the street, that the drays and carts unable to cross at the intersections, render the highway impassable to private vehicles, and are therefore driven to other streets, avoiding danger and delay; the omnibuses crowded to excess, cannot accommodate the vexed crowd on the side-walk, and the sudden halt with imminent risk of collision, with the drivers' "plenty of room, sir," with twenty inside—by no means softens the temper either of those in waiting, or those, who seated—not comfortably—look upon each moment of unnecessary delay, as an infringement on their rights.

Here is another. Not an *omnibus* is seen in the whole length of the street—carriages, drays and carts move with comparative ease, little strips of iron are laid along the street, upon and across which, vehicles pass without inconvenience, and which, the drivers (particularly of private carriages) evidently seek; there is no crowd, for the little cars glide along rapidly and frequently, accommodating every body; at a slight signal the bell rings, the horses stop, the passenger is comfortably seated, no rain drops in from the roof, the conductor is always ready to take the fare when offered, and the echo, "great improvement, this," is constantly repeated.

There is no accident on record, of injury to any passenger of street railways, whilst occupying a seat in the car; some few have happened to boys and incautious persons, from drunkenness, jumping from the cars whilst in motion, &c., but even these, are few in comparison with omnibus accidents.

Those remarks are as applicable to English as American cities—and no place are they more so than to London. The *Times* was first to advocate the change.* Speaking of the London Omnibus Tramway Company, November 18th, 1857, it says:—

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* *Vide* August 14th, 1856; November 18th, 1857; February 20th, 1858; March 17th, 1858, *City Article.*

The plan, as many of our readers will be aware, has been tried and adopted with very great success and considerable public benefit in Paris, Lyons, New York, and Boston; and the practicability of it has therefore been demonstrated beyond question. A tramway of this description has been for nearly three years in use between Paris, Boulogne, and St. Cloud, and is now extended to Sèvres, and Versailles, and also in Lyons, New York, and Boston; and large omnibuses, carrying from sixty to eighty passengers each, are thereon propelled by two horses at a speed varying from eight to ten miles an hour, with great facility. The part of the Metropolis on which the experiment is about to be tried commences with the road from Nottinghill-gate, *via* the Grand Junction-road, New-road, City-road, and Moorgate-street to the Bank, with branches to the Great Western and London and North Western Railways, and to Fleet-street, *via* Bagnigge-wells-road. The length of this line with sidings will be about eight miles and a half, and the road, with the exception of the inclines at Pèntonville, is broad and eminently qualified for the trial. In the event of its success, the company next contemplate the extension of the plan to the road from Edmonton to the city, by way of Kingsland and other parts of the Metropolis. The tramways when laid will be perfectly flush with the general surface of the roadway, and will not in any way interfere with the passage along and across it of any ordinary road, waggon, or carriage; and as the new omnibuses in passing along will be confined to the tramway, which will consist of a double line in the centre of the roadway, the sides of the road, and indeed the entire width, except during the instant of passage, will be free to the general traffic, which will thus be carried on without interruption. The great economy which will be effected by the adoption of the new tramway system, will enable the company to carry the public at reduced fares, and at a greater rate of speed. The omnibuses will be large and commodious, with flanged wheels and axles radiating to the curves, and, if found desirable, might be constructed with first and second class apartments.

* * *

The facility for starting and stopping the tramway omnibus, with improved break, will be quite as great as the ordinary road omnibus, so that there will be no loss of time on this account. It is this power in horses of starting or stopping almost instantaneously which makes the tramway for short distances and frequent stoppages equal, if not superior, to the railway with steam power. If the system of fixed stations or stopping-places along the route were adopted in lieu of stopping at the wish of every passenger, much time might be saved; but in New York, we believe, the tramway omnibuses stop wherever they are required to take up and set down passengers, and no inconvenience is found to arise from this system of working them.

This bill was defeated mainly through the opposition of Sir Benjamin Hall, Bart., Chief Commissioner of Public Works.

The *Observer*, (February 21st, 1858) in recording the proceedings of the deputation, consisting of Messrs. Coates, Stevens, James Samuel, the engineer of the company, and others, who forcibly brought the merits of the scheme before the Commissioner, says:—

> Sir B. Hall said he had maturely considered this plan, and of all the monstrous propositions which had ever been made or presented to Parliament this was the worst. He felt bound frankly to tell the deputation that, feeling it his duty to protect the interests of the Metropolitan public, he should be bound to give this measure his most determined opposition. Here was a trading company, seeking to appropriate to their own exclusive use the property of the public, which the public roads were, and for their own trading purposes and private benefit. If they desired the exclusive use of a road for their own vehicles, they should have taken the same course that other persons did, and have come to Parliament to obtain powers to make a road for such purposes, but here the company actually proposed to take to themselves 16 feet out of the width of the thoroughfares of the Metropolis. It was utterly impossible that the iron rails or plates upon which the carriages were to run could be laid on macadamised roads, for instance, with a certainty of always being kept on precisely the same level as the road; and carriages running diagonally against the plates would be subjected to have their wheels torn off, and most serious accidents would result, whatever precautions might be taken even. The weather would at times effect this. The right hon. baronet ridiculed the idea of setting up the tramways in the Champs Elysées, or in New York or New Orleans, as an example, as they bore no analogy to the thoroughfares of the Metropolis; and, after stating a variety of other objections, he expressed a hope and a belief that Parliament would dismiss so monstrous a proposition at once. The city of London and the lines leading to the City were not even now sufficient for the carriage and heavy goods traffic; and if a private company, merely for the sake of their own omnibuses, were to take 16 feet of roadway out of, in some instances, 25 feet, the case would be rendered a thousand times worse. Every parish through which the line passed was petitioning against the bill, and his advice to its promoters was that they should withdraw it at once.

The Cardinals endeavoured with their antiquated omnibus system of astronomy, to make the sun revolve around the earth, by imprisoning Galilio—learned professors saw no safety in Davy's lamp—distinguished physicians had no faith in Harvey's circulation—and Sir Benjamin Hall, if the short-hand notes taken at the interview are reliable, seems to have thrown cold water on the deputation, partly, to please his constituency, but mainly, because an accident happened to his carriage in passing some coal tramway in Wales.*

From Sir Benjamin's comments, he would have been among those clever men who ridiculed Watt's engine, sneered at Fulton's steamboat, and laughed at Stevenson's locomotive, but as these progressive minds triumphed over those who considered free trade in improvement criminal, so the practical working of Horse Railways must succeed in making advocates of the theorists who do not understand them.

That clumsy bungling affair which Sir Benjamin alludes to in Paris, has always been an eye-sore to the Emperor, and gives no better idea of the real Horse Railway, than does the *chemin de fer Americain* on the Neva's banks, at St. Petersburg,—the horse-power tramway from Carnarvon to Nantlle, or the Omnibus Railway along the docks in Liverpool.

Sir Benjamin Hall did not meet the arguments of Messrs. Coates and Samuel, except by prejudice. Arguing against facts is difficult, and overiding stubborn truths impossible.

The following statistics which have just been sent me from New York, may show Sir Benjamin, that Horse Railways are as much a reality in America, as cotton factories and iron mines are in England.

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* Mr. Verey said, those tramways would wrench off the wheels of the carriages, and Sir Benjamin Hall had stated, that his own carriage wheels had been so wrenched off twice by tramways in Wales.—*Vide Observer*, March 14th, 1858. Deputation of Parishoners to Lord John Manners.

New York, November 28th, 1859.

George Francis Train, Esq.,
9, Square Clary, Paris.

Dear Sir,

I duly received yours of the 7th instant from Paris, and herewith send you the required statistics.

They are obtained from the sworn statement, which, by law, each Railroad has to furnish, under oath, to the Comptroller of the State, and is taken from his archives.

Their last report is for the year commencing October 1st, 1857, and ending September 30th, 1858. The business on each of the following five city railroads this year, has been from 10 to 20 per cent. better than it was last year. But, they do not send their reports to the State Comptroller until next month, and I cannot get them until after that time.

Statement of the earnings, cost of operating and maintaining the five city railroads of New York and Brooklyn, the number of passengers carried by each, the number of accidents occurring on each, and the dividend paid by each for the Fiscal year, ending October 1st, 1858.

BROOKLYN CITY RAILROAD.

POPULATION OF CITY—200,000.

Length of City Roads operated—21 miles double track.

	Dols. Cents.
Capital Stock paid in is	1,000,000
Total cost of road, equipment, and its real estate	1,038,839 : 9
Weight of rail per lineal yard, is 64 pounds.	
Number of passenger cars for 20 passengers each, is 100.	
Number of passengers carried during the year 7,705,839	
Number of miles run during the year was 1,994,186	
Weight of each passenger car, 4,700 lbs.	
Rate of fare for adults 5 cents, for children 3 cents each person.	
Aggregate amount of gross earnings for the year ..	395,026 : 70
Aggregate amount of operating and maintaining expenses ..	288,771 : 22
Amount of dividend declared and paid, 8 per cent. on ..	1,000,000 : 80
Amount carried to surplus fund..	18,778 : 85
Total amount of surplus fund to October 1st, 1858, including last item	57,125 : 58

Accidents to persons during the year—five.

2ND AVENUE RAILROAD IN NEW YORK CITY.

Length of 2nd Avenue Railroad operated, 8 miles single track.

	Dols. Cents.
Capital Stock paid in 627,000 dols., authorised	800,000
Total cost of road, equipment and its real estate ..	1,005,403 : 71
Weight of rail per lineal yard, 72 pounds.	
Number of passenger cars owned by the company, 80.	
Number of passengers carried by them during the year 4,504,645	
Speed per hour including stoppages, average 5 miles.	
Aggregate amount of earnings during the year, ending October 1st, 1858..	227,457 : 70
Aggregate amount of operating and maintaining expenses ..	117,851 : 96
Amount of dividend declared and paid, 6 per cent. on 627,000 dols.	37,620

☞ No accident to persons during the entire year.

3RD AVENUE RAILROAD IN THE CITY OF NEW YORK.

Length of 3rd Avenue Railroad operated is 6¼ miles double track.

	Dols. Cents.
Capital Stock all paid in, is	1,170,000
Total cost of road, equipment and its real estate ..	1,378,090 : 74
Weight of rail per lineal yard, 72 pounds.	
Number of passenger cars owned by the company, 70.	
Number of passengers carried during the year, was 7,945,462	
Number of miles run by this road during the year, was 1,460,000	
Average weight of each passenger car, 4,000 pounds.	
Rates of fare for adults 5 cents, and for children 3 cents each.	
Average speed per hour including stoppages, 6 miles.	
Aggregate amount of gross earnings for the year	446,504 : 13
Aggregate amount of operating expenses	242,811 : 53
Amount of dividend declared and paid 8 per cent. on 1,170,000	93,600
Payments made for purchases of real estate	77,309 : 62
Amount added to surplus fund	16,886 : 93

Total number of accidents during the year was to six persons.

6TH AVENUE RAILROAD IN CITY OF NEW YORK.

Length of 6th Avenue Railroad operated is 4 miles double track.

	Dols. Cents.
Capital Stock paid in is	750,000
Total cost of road, its equipment and its real estate is ..	855,957 : 22
Weight of rail per lineal yard is 74 pounds.	
Number of passenger cars in use and owned by the company is 70.	

	Dols. Cents.
Number of horses and mules in use, owned by the company, is 422.	
Speed per hour, including stoppages, 5 miles.	
Number of passengers carried during the year was 5,612,357	
Number of miles run by this road during the year was 950,572.	
Average weight of each passenger car, 4,000 pounds.	
Rates of fare for adults 5 cents, for children 3 cents each.	
Aggregate amount of gross earnings for the year was	280,617 : 86
Aggregate amount of operating and maintaining expenses was	178,226 : 24
Amount of dividend declared and paid, 10 per cent. on 750,000	75,000
Total funded debt of the company paid off and extinguished	12,844 : 82
Amount contributed for the year to the surplus fund	14,546 : 80
No accident to persons during the whole year.	

8TH AVENUE RAILROAD IN CITY OF NEW YORK.

Length of 8th Avenue Railroad operated is 5 miles double track.

	Dols. Cents.
Capital Stock all paid in is	800,000
Total cost of road, its equipment and real estate is	756,142 : 87
Weight of rail per lineal yard is 72 pounds.	
Number of passenger cars in use and owned by the company is 61.	
Speed per hour including stoppages is 5 miles.	
Number of passengers carried during the year was 6,768,203.	
Number of miles run during the year was 1,028,142.	
Rates of fare for adults 5 cents, for children 3 cents each.	
Aggregate amount of gross earnings for the year was	338,410 : 19
Aggregate amount of operating and maintaining expenses	177,753 : 91
Amount of dividend declared and paid, 12 per cent. on 800,000	96,000
Amount carried to surplus fund for the year	64,656
Number of accidents to persons during the year, one.	

RECAPITULATION.

Number of passengers carried by Brooklyn city roads for 1858						7,705,839
Ditto.	ditto.	2nd Avenue city roads, New York, for 1858				4,504,645
Ditto.	ditto.	3rd Avenue,	ditto.	ditto.	ditto.	7,945,462
Ditto.	ditto.	4th Avenue,	(details omitted)		ditto.	2,066,000
Ditto.	ditto.	6th Avenue,	ditto.	ditto.	ditto.	5,612,357
Ditto.	ditto.	8th Avenue,	ditto.	ditto.	ditto.	6,768,203
Total number of passengers by the five city roads for the year						34,602,506*

Total number of accidents on all the city roads for the year, twelve.

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* The *Times* records these returns, and says, " These railways, which are

DIVIDENDS IN 1858.

Brooklyn City Railroad Company, semi-annually,				8	per cent.
2nd Avenue railroad in the City of New York				6	„
3rd Avenue	ditto.	ditto.	ditto.	8	„
6th Avenue	ditto.	ditto.	ditto.	10	„
8th Avenue	ditto.	ditto.	ditto.	12	„

The above covers statistics for 1858. I will send you the reports of the present year as soon as published.

Yours respectfully,

GEO. T. M. DAVIS.

Mr. Schofield, M.P., one of the deputation that waited on Lord John Manners, Chief Commissioner of Public Works,* said :—

My experience in New York is favourable to such a scheme. The tramways there are wider than is proposed here, and carriages, much wider than our omnibuses, run upon them. I have seen carriages running on and across tramways at all possible angles, and I never saw any accident, or jolting, or nconvenience. The New York omnibuses hold forty or fifty people, and although the place I had to go to was four miles by the omnibus route, and only three miles by another route, I always preferred the tramway, as being more agreeable than any other mode of conveyance. The New York tramways have been most successful.

One of the objections made against tramways came from the Sewers' Commission, who thought that the public would be inconvenienced. The Gas Companies were also opposed to the system for similar reasons.

Mr. W. Haywood, Engineer of the City Sewers' Commission, brought up the report (Feb. 1858), upon the subject of Omnibus Tramways in the City, which after reviewing the projects of the company, came to the conclusion that the scheme would be fraught with public inconvenience, and would hinder the Commission in maintaining those highways in a fitting condition for general traffic.

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tracks laid down in the streets, the rails made of a peculiar form to avoid the objections to the ordinary rail, all concentrate in the business part of New York, and take the most of the travel to and from it."—*Times' New York Correspondent, April* 12, 1859.

* *Observer*, March 14, 1858.

James Samuel, C.E., in his valuable report (Nov. 4, 1857), thus alludes to this question :—

> Inasmuch as the general wear and tear of the highway will be greatly diminished, from a large proportion of the traffic being transferred to the tramway, which would otherwise come upon the road, it is reasonable to suppose that the boards and surveyors of highways will be interested in giving the project their support.
>
> The tramway being constructed with longitudinal bearings, will enable it to be diverted with great facility during any temporary repairs to gas, water, pipes, or sewerage, none of which will in anyway be interfered with.

Sir Benjamin Hall's opposition represented the Marylebone Parish, and the chief argument used by the deputation to Lord John Manners,* from the parishes of St. Pancras, St. Mary, Islington, St. James', Clerkenwell, Shoreditch, and Kensington, against tramways, was on account of danger from accidents.

> Mr. Hodges (Marylebone), *was prepared to show that it might be fraught with the greatest danger to the lives and limbs of the public, and impede the public traffic.* It was perfectly ridiculous to set up the tramways in New York as any criterion for this metropolis. The projectors of this tramway scheme proposed to take upwards of 16 feet of the centre of its roadways, and, so far as the Marylebone-road was concerned, the greatest width at any part was 48 feet, but that was only for a very short distance, and there was at one point, for a distance of 277 yards, a width of only 32 feet. He would ask his lordship how the general public traffic could be carried on, supposing this company to monopolise 16 feet out of 32 feet, thus leaving only eight feet on either side.

Simply because the railway does not monopolise any space. The greater portion of drays, carts, 'buses, private carriages, occupy the rail, turning out only when the passenger car arrives, when they again take the track as it is so much easier for the horses, and less wear and tear for the teams.

> The Rev. R. Eckett (St. Pancras) begged to remind the noble lord, that under the Metropolis Local Management Act, the subject of roads and sewers was

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* *Observer*, March 14, 1858.

one with which that office had something to do, and therefore they had came there to ask him as the head of that department of the government, *to aid the local authorities to protect the lives of her majesty's subjects on the public highways,* by giving a determined opposition to the second reading of the bill.

Mr. Elt, (Islington) said :—

> That a very large proportion of the New Road and City Road were macadamised roads, and it would be a matter of *continued probability that stones, &c., would get into the grooves of the trams and endanger the lives of the public, possibly by upsetting the omnibuses themselves.*

What a strange idea these gentlemen have of *Horse Railways;* many of the American streets are macadamised, but who ever heard of a car upsetting? Why, the fact is, the improved rail being flat —unfortunately for Mr. Elt's argument—there is no groove for the stones to "get into."

The fact before recorded, that over thirty-four millions of passengers passed over the horse railways of New York and Brooklyn in 1858, with only twelve accidents, is a practical reply to that question. Thirty-four millions! More than the population of the United States and Canada, or of Great Britan and Australia —one-fourth the entire number of passengers carried on the railways of the United Kingdom the same year; or, to make it more striking, three times the number carried in Scotland, and four times as many as passed over all the Irish railways, *and yet, only twelve persons injured by accidents!*

Another argument was advanced by Mr. Hawes, (Shoreditch) :—

> That those who kept carriages, or tradesmen *who required carts for there business, could not get up to their own doors, or certainly could not stand there, and so the general traffic would be greatly obstructed.*

Mr. Mackinnon, M.P., who conversed with me on the subject, acknowledged that this was the main objection to the plan.

There are, proportionately, more private carriages in Philadelphia than any city of the union, and there are more horse railways.

The streets are not so wide as on the line discussed by the Metropolitan deputation, and the opposition to the railway from landowners, carriage-owners, shopkeepers, and householders, was almost as warm as the opposition of hand-loom weavers to steam and water power in the manufacturing districts. But now, that experience has shown their advantages, the same ratepayers, who before hung back, would be the first to express indignation were the rails to be removed, and the old omnibus system replaced.

The following letter just at hand, bears upon the above objection, and confirms all arguments in favour, by showing active and successful operations of the Philadelphia roads :—

Philadelphia, December 12, 1860.

George Francis Train, Esq.,
5, Temple Place, Liverpool.

My Dear Sir,

On reading your letter to Mr. Morris, I am fully convinced that the great scheme of building passenger railways in the cities of Europe, must soon be accomplished. The question is, who will introduce them, and when? You write for statistics of our roads. Details I cannot give you in the absence of their reports, therefore, I can only generalise by giving you the names and a few ideas as to their working.

We have now in active operation in this city, the following roads: —

RUNNING EAST AND WEST.

Spruce and Pine-streets
Chesnut and Walnut-streets
Market & West Philadelphia-streets
Race and Vine-streets
Green and Coates-streets
Upper Ridge & Lower Ridge-streets
Girard Avenue

RUNNING NORTH AND SOUTH.

Second and Third-streets
Fourth and Eighth-streets
Fifth and Sixth-streets
Tenth and Eleventh-streets
Thirteenth and Fifteenth-streets
Seventeenth and Nineteenth-streets
From Germantown to Philadelphia

The roads average about seven miles single track. The cars go up one street and down the other, and, by a system of checks and correspondence you can step into a car opposite your door and go to any part of the city.

We have one-hundred and five miles of horse railways, and some ten millions of dollars invested.

Philadelphia contains a population of 600,000. If so many railroads can succeed with us, what, in all probability, would be the result of one or two main lines with branches, either in London or other cities ?

The most eligible place should be selected to commence the work; first build a short road, in order to allow an opportunity to those who may have prejudices existing against passenger railways, to examine into the whole thing *pro* and *con*. There is nothing, after all, like ocular demonstration; it carries conviction with it unmistakable in its character. You cannot be the loser by such a course, inasmuch as the result is already established beyond a single doubt. How could it be possible for the thing to be a failure in any of the thickly inhabited cities of Europe, when we have no instance here of a road failing to pay dividends when properly conducted? By these roads, cheapness, with increased facility, are at once accomplished; you have only to demonstrate the thing, to have hosts of advocates. The rails should be constructed and laid down, so that the travel for carriages will not be obstructed in the least. If I mistake not, you will have great opposition in your large cities, from the very fact of people imagining that these railways obstruct carriage travel. You can assure them, that the rail is so made as to be an advantage rather than an objection. The shopkeepers, so far from objecting to these railways, are nearly all stockholders, and from opposing in the first instance have become their strongest supporters.

Great improvements have been introduced since the first roads were built, and Europe can now avail itself of America's experiments.

Depend upon it, there is nothing that will prove so acceptable to the European public as a complete system of horse railways.

Yours very truly.

E. FREEMAN PRENTISS.

Strickland Kneas, Esq., the Chief Engineer and Surveyor of Philadelphia, in his report (October 12, 1858), to J. M. Gibson, Esq., Chairman of the Special Committee on Passenger Railways, says :—

As to their general usefulness, we can take as a precedent upon which to base an opinion, the great advantage that the present omnibus system, imperfect as it is, affords to all classes of our community. The rapid increase in the number of omnibus lines, each yielding a handsome revenue upon the investment, proves conclusively the large number benefited; and the saving of time to those whose residences are at a distance from the business mart, as well as the benefits accruing to the merchant in rendering his store or counting-house accessible from all sections of the city without fatigue or loss of valuable time, will secure the hearty co-operation to any improvements in the present arrangements that may be suggested.

The advantage of a railroad car over an omnibus, as now used, is self-evident, not only to the passengers, but to those who may reside upon the streets through which the route may be located. The construction of the cars is such as to afford the greatest comfort to passengers, not only in their ingress and egress, but while passing to their destination—the width of the car being equal to the distance from hub to hub of an ordinary coach. The interior proportions will be sufficiently large to avoid many discomforts now so justly complained of.

To the residents upon the route one great advantage will be the relief from the incessant din attendant upon the rapid transit of heavy coaches, so injurious to the invalid, and now urged by many as a serious objection to living upon an omnibus route; their rapidity of motion and security will also be at once appreciated—moving, as they can, more rapidly, with less noise and greater safety than the cumbrous vehicles that now, to accommodate a passenger, or to avoid apparent danger, depend upon the strength of the driver and the willingness of stubborn horses; while with a city passenger *car*, the horses require no lines, further than for guidance around curves and keeping them within the track; the application of a well arranged brake alone causing, if necessary, an instantaneous stoppage. They are, therefore, in crowded thoroughfares attended with much less danger than vehicles of ordinary construction and similar motive power.

Their introduction will prevent the streets being, as now, blocked by a double, and frequently a treble row of coaches, creating an intolerable annoyance to the business man, and will afford to the community greater accommodations in every particular wherein they consider the present system advantageous.

* * * * *

Again, he says:—

By increasing the guage to five feet two inches, vehicles travelling upon the track, will use both rails without injury to the iron or pavement, and the wagon-edge of the rail will offer no impediment to turning out, should a heavy team be overtaken by a car, and will cause an increased revenue to draymen, carters, &c., by enabling them to haul a larger amount more expeditiously with the same horses.

The mere circumstance of having a railroad track properly constructed upon a street, which to many seems an insuperable objection, is, in my opinion, none whatever, when that track is used solely by horse power.

One great difficulty regarding its introduction, is to dispel from the minds of those who are most strenuous in their opposition, the idea of an extended train of heavily laden cars, drawn at a great and unmanageable velocity by steam power, or where this extreme is not reached, we have the effect of the imperfect track on Third-street to combat; but, the roads under consideration are for the use of the same motive power as the carriages for which is claimed the exclusive right of the highways, and offers less obstruction and danger than an omnibus whose course is erratic, frequently producing a fractured axle or wheel when least expected.

The objection to a single track in the middle of a fifty feet street, as interfering with the requirements of adjoining tenements is one which will be waived so soon as the experiment is made, for in all cases the carriage-way is twenty-six feet wide, giving a clear space on each side of the rails of ten feet five inches, and of the car in passing—which is but momentary—nine feet six inches, sufficient for all household purposes, and offers no impediment to builders when occupying the street with materials of construction, as it infringes but six inches upon the distance from curb, now allowed them by law.

The further objection, that the passage of cars will interfere with the traffic upon the highways is equally untenable, as they will, in fact, be advantageous in keeping the current more perfect; for, should a street be occupied to its legal limits with building materials, there is but room for the passage of *two vehicles*; they are therefore confined to specific tracks when there are no rails, then why not allow one stream of carriages to take the rails and follow or precede the car—collisions would be less frequent and the constant jams caused by three coaches endeavouring to pass through a space sufficiently wide for two only, would be prevented.

The London Commission of Sewers are so convinced of the desirability of tramways, Mr. William Haywood (who last year reported against the Omnibus Company's proposition), now reports in favour of them, and recommends 1,200 to 1,500 feet of Mr. Redman's patent to be tried in Leadenhall-street. The authorities have to make but another step and the London public will experience the luxury of the Passenger Railway.

TRAMWAYS IN THE CITY.

The expediency of laying tramways along the principal traffic routes of the city having been frequently brought under the consideration of the Commissioners of Sewers, Mr. Haywood, their engineer and surveyor, was directed to report upon the subject generally, but more particularly with reference to a proposal submitted by Mr. John B. Redman. Mr. Haywood has accordingly presented an able report, in the course of which he says that in great towns the advantages of tramways may be thus stated:—

1. The diminution of friction, the consequent facilitation of the draught of vehicles, and reduction of the strain of horses.

2. The diminution of noise and vibration, and the increased comfort, both to travellers and inhabitants, consequent thereupon.

3. An increased duration of surface, the consequent diminution in the frequency of surface repairs, with the inconveniences attending such reparations.

In addition to the foregoing they are very useful in streets having much pedestrian traffic, where the footway space is small; they prevent to a large extent the splashing from the wheels of vehicles, are always cleaner and drier than ordinary pavements, and are more readily kept clean by the scavengers.

For many reasons, therefore, the adoption of tramways where practicable in large and crowded cities is desirable. * * *

The tramway proposed by Mr. Redman is formed of hollow boxes of cast iron, each box being 6 feet in length, 2 feet in width, and 9 inches in depth their thickness being at the sides about half an inch and the tops and bottoms about 1¼ inch; the surface upon which the wheels are to travel have raised projections of a diamond pattern, the diamonds being about 3 inches square across, and act diagonally upon the line of draught. The space between the diamonds is 1 inch, and the depth three-quarters of an inch, the whole surface is therefore covered with a reticulation of grooves, which, from their proportions, are not likely to render the way less valuable in respect of traction, but, nevertheless, will diminish the chances of slipping, should the horse get his foot upon them.

As to duration: The tramway in the Commercial-road, laid in 1829-30, is principally of Aberdeen, Herm and Guernsey stones, the proportion of the former being the largest. The length of tramway is altogether two miles of wheel track; the annual traffic to which it has been subject I assume to have been about 118,000 vehicles; the tires of their wheels varying from 2½ to 9 inches, latter width being, however, exceptional, and the velocity from 3½ miles to 7 miles per hour.

The loss upon the Aberdeen stones, including that worked off in the periodical reparations, has been found to be 4½ inches in the 30 years; and the stone may therefore be taken as worn out in that time. The loss upon an iron plate, subject in every respect to the same usage has been about one-fith of an inch in nine years, which is equal to a loss of one inch in 45 years. It is assumed by Mr. Redman that one surface of his tramway will endure 24 years, that it will then turn, and the other face will endure a similar period, its total service being 48 years, and this assumption seems supported by the data quoted. * * * * *

Mr. Haywood thus concludes his report:—

Under all circumstances I beg to recommend that about from 1,200 to 1,500 feet of Mr. Redman's cast iron tramway be laid experimentally in Leadenhall-street or Fenchurch-street, in single lines, next the kerbs, those being places where reparation must be made in the approaching spring, and where, from the severe nature of the traffic, the several heads of security, duration, or cost can be advantageously tested and studied. This can be done certainly with but little, if any, pecuniary loss, and I believe with positive gain, and information will be obtained in which no public body in the metropolis is so much interested in acquiring as your hon. Commission has.*

This age is practical—save time and you save money—show it an improvement and how soon it is adopted. Free trade in passenger railways is more worthy of English liberality than protection in omnibuses. The day has come to introduce them, for London is all the time crowding for more room.

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* *Times*, January 9, 1860.

> Railways in the City.—Do the objectors to city railways (says the *City Press*), know that a million and a-half strangers pass through the City every day? Do they know that more than 8,700 cabs and omnibuses, and more than 9,000 waggons and carts pass over London-bridge daily? Do they know that 70,000 persons traverse London-bridge daily in vehicles, and above 100,000 on foot? Do they know that Messrs. Pickford, and Chaplin, and Horne, are perpetually barricading the streets with chests and hampers and hop-pockets, which they would rather not bring into the City at all, but hurry to their several destinations by continued and connected lines? Have they, in fact, thought about the question as one of facts and figures, or only seized on a point to furnish an idea for a "neat speech?" The most effective and the easiest oratory is declamation, and if you declaim against an assumed misappropriation of money by a public body, you make sure of carrying your audience with you.

The Horse Railway is an important link in the chain of progress. What is more interesting than to run along the path of improvement from the child Asia to the man Europe, stopping a moment to reflect at the slow coach omnibus system at the half-way station of those middle ages when credulity made up for intelligence—when men did the work of horses, and palanquin and sedan chair made way for cab and bus—when captains went to sea without a compass—sailed without chronometers—when geographical knowledge comprised a little patch of sterile land—when philosophy was without scale—astronomy without demonstration—when learning had no printing press, writing no paper (the tax on which you have laboured so industriously to remove), and paper no ink.

Those were the days of wax and birch bark parchment—stereotyping on wood and not leaden types—when they made war without powder, shot, mortars or cannon—without Minie, Colt, or Armstrong—when magnetism had no telegraph, iron no rails, steam no boilers. When flint and steel, instead of lucifer match made the fire, and the sun-dial instead of the watch told the hour—when trade was without books—correspondence without postage—when merchants kept no ledgers, and shopkeepers no cash books. Surgery had no anatomy then, emetics no ipecacuanha, agues no quinine, clothing no factories, and the Diligence had not even succeeded the saddle horse.

All those days are with the past. The photograph has displaced the daguerreotype. The stereoscope is pushing away the photograph. The telegram saps the brains of the mail bag, and the sewing machine gives antiquity to the "Song of the Shirt."

Battering-rams, and bows and arrows were not used at Solferino. The gas light supersedes the cocoanut lamp. The quill followed the thorn bush, the steel pen the quill, and who so far behind the age as not to use the copying press? Arkwright's cotton jenny coined pounds in England, while Ely Whitney's cotton gin coined dollars in America. So will the introduction of Passenger Railways confer a blessing upon the public and add wealth to the nation.

Let me try, said Fulton, and the steamer went four miles an hour; now the rivers and lakes are filled with floating palaces. Let me put the wire between Washington and Baltimore, petitioned Morse, and all the world wondered! Now the girdle is about to be put about the earth, as Shakespere said, in forty minutes. Nothing was ever accomplished without talking. How could the government live without an honourable opposition? Truth is sifted through argument. All new inventions must pass through the fiery furnace of scepticism. Nobody believes a fact till demonstrated.

England has been fifty years in introducing the American volunteer system, but, it is to be hoped, that as many weeks will not pass before she gives a fair trial to the American passenger railway.

The opinions of practical men are too valuable for me to omit the following letter written by the engineer who made the surveys for the London tramway company :—

26, Great George Street, Westminster, S. W.
January 23, 1860.

My Dear Sir,

You have adopted the right course in addressing your letter on horse railways to the President of the Board of Trade, and I am sure from the care bestowed on matters bearing on the public safety by the officers of that department of her Majesty's Government, that the subject when once brought prominently before them by their chief will receive that deliberate and careful consideration which its great importance demands. Had the London Tramway Company, who projected the first horse railway for the Metropolis two years ago, been fortunate enough to go before that tribunal instead of the then chief of the Board of Works, there can be no doubt, ere this, that project would have been in successful operation.

You ask me to write you my views of the advantages of horse railways for the streets and environs of cities. I refer you to my report to the Omnibus Tramway Company, in which they are briefly and distinctly stated.

My observation and experience since that was written, fully confirm all there advanced. Day by day my conviction is strengthened, that the introduction of tramways in combination with the systematic classification of the traffic is the only rational system of relieving the crowded thoroughfares of this great city. They would turn chaos and confusion into regularity and order—noise into tranquility—dust into cleanliness – time lost by blocks into money gained. The discomfort of the clattering crowded and badly ventilated omnibus into the luxury of the cleanly and noiseless railway carriage.

The city authorities appear to be at last awake to the advantages to be derived from tramways, and are about to make a beginning by a trial at length of Mr. Redman's plan, which Mr. Hayward, their surveyor, has recommended to be laid down. So far this is well, but they must not be satisfied till the iron tramway in the crowded street is constructed so as to be available alike for the heavy creaking brewer's dray, the Brougham, the four-wheeled cab, and Hansom, by day, and the broad and narrow guage railway truck by night. I know that this may be effected and without inconvenience to the ordinary road traffic. Look at London bridge; see what has been done there by the simple common sense suggestion of separating the slow from the fast traffic, and compelling each class to keep its respective rank. Beyond doubt, this system of classifying traffic, with certain modifications, and with the aid of iron tramways, is capable of extension to the most crowded thoroughfares of large cities and at no very formidable outlay.

The objections raised by Sir Benjamin Hall, now Lord Llanover, which were urged by him with extraordinary pertinacity, at the interview with the London Omnibus Tramway Company, as to the difficulty of keeping the tramways level with the surface of macadamised roads, are futile. The cast iron gutters laid down since that interview, the entire length of both sides of Regent-street, prove to demonstration the practicability of maintaining the surface of the macadamised road with that of the tramways.

I believe, the time is not far distant when the system of horse railways in and around cities and large towns, will become general, and those who embark capital in their construction in routes where the traffic is large will realize an ample return, provided they can secure the privilege of carrying the tramway omnibus passenger traffic, even at one-half the rates now charged.

The public will gain by reduced fares and increased speed. The road trusts and parishes will gain by having the great bulk of the traffic transferred from the road to the tramway, thus reducing the cost of maintenance, and relieving the ratepayers, and the saving in wear and tear of horses and repairs to all vehicles using the tramway will be beyond belief.

I thank you for the perusal of the first proof-sheets of your pamphlet, you have introduced *facts*, which are stubborn things, and which must command the attention of those in power—the subject is one well worthy of your enterprise and energy. You may rest assured, I will aid you by every means in my power.

I am,
My dear Sir,
Yours faithfully,
JAMES SAMUEL.

To George Francis Train, Esq.,
Liverpool.

These are some of the points used in the case of the London Omnibus Tramway Company.

The population of London, resident and occasional, has so rapidly increased, and is multiplying so fast as to exceed the capacity of the leading thoroughfares.

The Metropolitan Board of Works have occupied themselves in making new streets, widening others, and removing obstructions outside the City boundary. The City authorities have opened Cannon-street, Victoria-street, and improved others of the thoroughfares, but none of these measures have succeeded in relieving to any sensible extent the great thoroughfares of Fleet-street, Holborn, Ludgate-hill, Newgate-street, Cheapside, and Poultry; the traffic increases faster than a passage for it can be constructed, and the difficulties gain ground daily.

To buy up the property right and left of Fleet-street, Newgate-street, or the Poultry, would require the whole wealth of a German State; and, therefore, to widen those thoroughfares is out of the question; to make new streets parallel to them would incur almost as great an outlay.

All schemes for a Metropolitan railway have utterly failed.

One hundred and thirty-four omnibuses daily run to and from Paddington, Bayswater, and the City, *via* Holborn, Newgate-street, and Cheapside, making 1,312 journeys daily through those thoroughfares; and there are also thirty-four other omnibuses running to and from Bayswater, *via* Fleet-street, Ludgate-hill, and Cheapside, making 280 journeys daily; thus, practically to serve this district, 1,592 omnibuses, carrying about 25,000 passengers, daily pass through the most crowded streets in the City.

In addition to the above, there is a continuous and increasing stream of cabs. The number of cabs in the Metropolis increased from 3,297, in 1852, to 4,505 in 1857.

Thus, we have confined thoroughfares incapable of being widened, and a traffic daily increasing. The question to be solved is this:—

Can the traffic be compressed into a smaller compass, or diverted without disadvantage to the traveller?

* * * *

Those who judge only by the antiquated tramway in the coal districts of Monmouthshire and South Wales apprehend that the rail must rise above the surface of the road, and so injure, or even tear off, the wheels of ordinary carriages. Such an apprehension is absolutely groundless, and by engineers deemed absurd.

By adapting omnibuses to these tramways, one vehicle with two horses will carry sixty passengers, instead of twenty-one, and the fares may be reduced 33 per cent.

The bulk of the traffic otherwise passing through the narrow and crowded thoroughfares of Newgate-street, Cheapside, and Poultry, and part of that passing through Fleet-street and Ludgate-hill, will be conveyed by way of the New and City-roads, in the same or less time than by the present route.

Ratepayers of the parishes through which the tramway will pass will be relieved of a portion of the tax for repairing the roads, as they will be saved the wear and tear of the omnibuses and horses which now pass over them. The wheels will be *entirely* removed from the road to the tramway, and the number of horses employed to carry the *same* number of passengers as at present travel will be reduced one-third.

The passage of the tramway omnibus on the smooth surface of the rail will be comparatively noiseless.—*Observer*, February 21, 1858.

The *Times*, always first to advocate a reform, took up this question in earnest two years ago. The absolute necessity for some relief to the crowded thoroughfares is thus set forth:—

The question is, whether the traffic of the Metropolis is to remain in such a state as to absorb more time in getting from the Bank to the Treasury or the Houses of Parliament than would be required to reach London from Reigate or Windsor? The proposition of the promoters of the street tramway is, to lay a line from Notting-hill-gate to the Bank, *via* Bayswater and the New-road, and thus to relieve Cheapside, Holborn, Fleet-street, &c., of the 1,592 omnibus loads of passengers to that district by which these thoroughfares are daily impeded. The tramway would consist simply of a small grooved rail let into the road, and would not create the slightest interference with the ordinary traffic, the system being similar to that which has for years been used successfully in the principal American cities. It is asserted that it would enable three times the number of passengers to be carried by the existing number of horses, thus affording an opportunity for a commodious construction of vehicles simultaneously with a vast reduction in fares that it would reduce parochial rates by preventing wear and tear of the roads, and that, in a great measure, it will remove noise. That, in allowing such an experiment to be made, every precaution should be enforced to enable it to be done away with if it should prove objectionable, and to prevent anything like permanent pecuniary rights being obtained by a body of individuals over a portion of a highway which is equally the property of all, no one will dispute; but these are matters capable of easy adjustment. It is certain the present system of London locomotion cannot continue much longer. Each suggestion for a remedy is discountenanced. Underground lines, tubular lines, and every other contrivance that would promise a mitigation of the evil have one after the other been set aside, but the feeling that something must soon be done daily increases. If any one would take the trouble to calculate the annual money loss to our population from this monstrous anomaly, which causes their persons and goods to be blocked up daily in the midst of their most hurried avocations, while every faculty is taxed to accelerate their communications with America, Australia, or the Continent, it would be found that the sum we pay for the whole of our ocean mail service would not compare with it. Suppose a contrivance that might save but half an hour a-day even to only 100,000 of our population, and valuing their time but at sixpence per hour, the economy per annum would be little short of £500,000, and this without reckoning any advantage in the transmission of merchandise and the non-delay of horses. It is palpable, therefore, that millions are annually sacrificed through the want of some Parliamentary and municipal recognition of the necessity of encouraging any feasible scheme that may lessen such gigantic national waste. Objections can, of course, be raised to everything in turn, but the mischief has now reached a point at which it is the business of those who pursue this course to state the plans they are prepared to offer in substitution.—*Times*, February, 26, 1858.

The opinions of those on the spot, at the time the Tramway Bill was agitated, are worthy of being recorded, for the same arguments bear more or less on Sir Robert Ferguson's bill, now before Parliament:—

So far as we understand, (says the *Engineer*, March 5, 1858), Sir Benjamin has never expressed the precise reasons for his strenuous opposition to the Tramway Company's Bill going before a committee of the House. All we learn is, that he considers the proposition to lay down tramways in the public streets as a gross infringement on public rights, and we cannot but conclude, considering his general ability, that he must have received his instructions from his constituents. The vote of Friday last, however, has rendered his opposition comparatively harmless, and we sincerely trust that the new Chief Commissioner will look upon the scheme of facilitating the conveyance of the public through London with more favour than his predecessor. We hear, indeed, of one objection which was raised by Sir B. Hall to tramways, which was, that omnibuses running upon them could not turn out of the way so as to enable other vehicles to cross the line of their course. Surely such an objection was made in joke! Is it absolutely necessary that every butcher's cart should cross a street at the rate of ten miles an hour, and that at a moment when so doing would detain, perhaps, sixty persons, until the driver had gallantly cleared the tramway? We will admit that it is not unusual for the drivers of vehicles coming down Ludgate-hill to have suddenly to turn their horses half round when at the bottom, so as to allow a reckless youth from Farringdon Market to pursue an unchequered course over Blackfriar's Bridge. But is this a desirable state of things? Does Sir Benjamin Hall ever enjoy the friendly abuse which may be heard at this crossing several times during the day, that he so determinately opposes the introduction of a system calculated to remedy the evil?

Let us for a moment consider what change it is proposed to make in the traffic through the town, by the construction of tramways. It appears that every day as many as 1,312 journeys are made by omnibuses between Bayswater, Paddington, and the City, through Holborn, Newgate-street, and Cheapside, and that there are 280 journeys made daily between Bayswater and the City, by way of Fleet-street, Ludgate-hill, and Cheapside. This is equivalent to 1,592 omnibuses, carrying some 25,000 persons, through the most crowded part of the City, and for what? To reach the Bank, which they might just as well do by a much more convenient route, that of the New-road and Moorgate-street, only that the distance is somewhat greater. Not a tithe of these 25,000 stop short of the Bank, or if they do so, they could by means of the "correspondence" system be set down at their destinations. The proposed tramways will practically shorten the New-road route between Bayswater and the City, and make it, in point of time, considerably less than the one now taken, and yet there are those who object, on the most frivolous grounds, to the introduction of the change. The gas and water companies think of their pipes, the sewers commissioners of their sewers, of the telegraph companies of their wires, and it is not improbable that all of them will be represented in opposition to the Tramway Company's Bill. We trust, however, as all these several interests can be fairly dealt with without inconvenience or wrong being done them, that the good sense of those before whom the project comes will induce them to listen to no factious opposition; and supposing it be proved, which we believe it cannot be, that some temporary inconvenience may arise from the adoption of tramways, that the great advantages which they are calculated to confer upon the omnibus-travelling public will be constantly borne in mind.

Again, the *Engineer*, March 19, 1858, takes up the subject. This is the only way to bring this important matter before the public. The Fourth Estate can open the eyes of the incredulous when everything else fails :—

To those passing through London from one railway station to another, the importance of a ready means of traversing the streets is as great as to those living in them. How frequently does it happen that all one's calculations, made with the most scrupulous care, and perhaps after some hours' battling with Bradshaw, are upset by the accidental crowding of the streets of London, which may unexpectedly detain for an almost indefinite time, an express passenger who has crossed the greater part of the country at the rate of from forty to sixty miles an hour? Who has not occasionally spent as long in getting from the Paddington station to that of London-bridge, as he has taken to get from Didcot, or even from a more distant place? One great drawback to improving the means of transit through London has been undoubtedly the vast costliness of most of the plans which have from time to time been brought before the public, but no objection of this kind could be made to the last attempt to grapple with the evil of overcrowded streets.

The travel through London for two-thirds of the present omnibus fare, and at a speed of eight miles an hour instead of six, would be no small advantages to the omnibus-travelling public; and, setting aside the difficulty of duly controlling the Tramway Company, which might very easily have been surmounted, we are at a loss to understand what could reasonably stand in the way of the scheme being carried out. It appears to us that the proposition to lay tramways was just one of those reasonable measures capable of being realised by comparatively a very small outlay, which should have received the general support it deserved. Even supposing other undertakings, perhaps more perfect, such as that of the Metropolitan Railway Company, were successfully completed, still the tramways must ever have been useful and convenient public improvements; or, if we look at the matter in the most unfavourable light, there would have been no difficulty in pulling the whole of the seemingly much-dreaded tramways up again, so soon as they were found to be in the way, and not necessary. That this could ever have actually been the case we deny, as the local traffic along the roads would always give plenty for omnibuses to do, especially if they ever be made tolerably roomy and be kept clean. The scheme has, as many of our readers will already have learned, been opposed by Sir B. Hall in his place in Parliament, and a motion has been agreed to to postpone the reading of the

Tramway Bill for six months, which is a civil way of throwing it out altogether. Where was our new Chief Commissioner of Works that he did not use his influence in supporting a measure which was very popular, and which would, if common care and principles of straightforward dealing had been exercised on the part of the Government and the company, have resulted in one of the most reasonable undertakings ever brought before the public.

The last American advices say, that the cities of New Orleans, Quebec, and Montreal are introducing Horse Railways, and a bill has just been presented for a double rail down Pennsylvania Avenue, Washington.

Desirous of embodying in this pamphlet all the information I can gather on the subject of Horse Railways, I insert the following letter in relation to the Irish Tramway Bill and the proposed Dublin Company:—

10, South Frederick Street, Dublin,
January 23, 1860.

Sir,

In reply to your request to know something of the Irish Tramway Bill brought in last session, but postponed on account of some opposition from the Dublin Corporation or interested parties, let me say, that if you apply to any member, you can get a copy.

The Act appears fair and reasonable. First, the promoters in counties on having lodged 10 per cent. of the capital, go before the cess-payers and magistrates at Road Sessions, then before the Grand Jury, and having been so far successful must get the fiat of the Judge of Assize with one shilling presentment. In boroughs and towns the Corporation and Commissioners must be applied to, and if any factious opposition be given, there is a reference to the Board of Trade, whose decision is final. Not having a copy of the bill, this is my impression. Neither county or corporation can make any advances save the one shilling presentment.

Having been a resident in New York and other American cities where the Horse Tramways are in such useful and profitable operation, I thought they were equally applicable to this country. At first, the people, supposing the the rails to be *common* ones, were rather against the project, but now that they have been put in possession of the real facts through the Press, that instead of obstructing they facilitate transit, not only by their own cars, but by permitting public and private carriages to use the rails, all are in their favour. When we consider that these useful lines double, can be laid at £3,500 to £5,000 with all equipment of horses, cars, harness, &c., in the most crowded thoroughfares and through our cities, where steam railways would cost from £100,000 to £300,000 per mile, as in the case of the London and Blackwall, North London, &c., and here, of the Dublin and Kingstown, (which, coming only to the end of the city, with six miles in the country, cost 62,000 per mile, and yet is at 100 premium), we naturally conclude that they are a safe investment.

Though the Dublin Corporation last year opposed the bill, I trust that on reflection, seeing the advantage to the public of our lines in all directions—the example of the City of London, which, in 1848 opposed, but by the report of their engineer, (see *Times*, 9th instant), now support them as well as the permission granted by their fellow corporations of Belfast, Londonderry, and Limerick, and the voice of the people; they will be the most ardent supporters.

I would refer you to the *Times* of 12th April last, where their New York correspondent gave the returns in that city for 1858, as 27,057,802 passengers; receipts 1,352,887 dollars, being an increase of 17 per cent. over 1856, though the intermediate term was of great commercial depression.

All our streets and roads are level, compact, and well made, so that there will be little comparative expense in laying the rails, which will be double lines to the crowded suburbs of the south side, and single to the north and east, where, from want of facilities, the population has not set as to Kingstown and Rathgar. Though our capital is fixed at £100,000, we expect that £60,000 will be sufficient to lay the lines with full equipment. The population of the city may be 300,000 with 100,000 more in a radius of six miles. Dublin, like New York, has a great population of independent people, being new from the country, drawn by city attractions, educational establishments, &c. The Law Courts are also here.

Knowing your connection with many capitalists, and parties interested in the horse passenger lines of New York, Philadelphia, Boston, &c., I willingly give any information in my power, especially as the New York and Philadelphia gentlemen connected with the tramways gave me every information, for which I am much obliged.

Before concluding, I would remark, the few accidents on Horse Railways compared with the steam roads, and that the New York and Brooklyn lines in 1858, carried 34,633,525 passengers, or 1-4th of the whole number of those in all the railways in the United Kingdom, or nearly three times as much as on all the Scotch and Irish lines. I enclose you a prospectus of our Company.—And am, dear Sir, yours truly,

W. KERNAGHAN.

George Francis Train, Esq., Liverpool.

The opposition to these roads in Boston was so great the whole enterprise would have been abandoned but for the perseverance of a few energetic men who determined that the system should have a fair trial.

Here is a statement of the CITY RAILROADS OF BOSTON AND ITS SURROUNDINGS. Population 200,000.

CAMBRIDGE RAILROAD, BOSTON.

This railroad, constructed in the streets of Boston and Cambridge, from Bowdoin Square, in Boston, to Harvard Square, in Cambridge; and from thence to Mount Auburn Cemetery and the line between Cambridge and Watertown, where it connects with the Waltham and Watertown Railroad; with a Branch from Harvard Square, in Cambridge, through North Avenue. The construction of the road was commenced September 1, 1855, and it was so far completed, March 26, 1856, that cars were run upon it on that day, on experimental trips, for the first time, by the Union Railway Company, to whom it has been leased.

This was the first horse railway built in New England, and its originators experienced considerable difficulty in obtaining subscriptions to the stock and bonds of the Company, to pay for the construction of the road, owing to the fact that the experiment of a horse railroad was one at that time untried, and its success doubted. Such great doubt was manifested as to the success of this road, that the Company could with difficulty secure a subscription to their stock and bonds the amount of about 43,000 dols. only. The contractor, therefore, agreed to receive this amount on account of his contract; the balance to be paid him in stock and bonds. * * * *

WALTHAM AND WATERTOWN RAILWAY, BOSTON.

This road was leased to the Union Railway Company, April 11, 1857, (which lease was confirmed by the stock-holders, July 6, 1857), for the term of ten years, for the sum of fifteen hundred dollars per annum, from May, 1857, payable semi-annually on the first days of July and January—with the privilege of renewing the same for five years longer, at the same rate—they to keep the road in good repair at their own expense.

Statement of the UNION RAILWAY COMPANY, BOSTON, For the year ending, November 30, 1850.

	Dols. Cents.
Cost of construction and equipment, ...	476,765 : 18

Total per centage of dividends at the rate of 10.58 per cent. per annum, leaving a surplus of 6,178 dols. 54 cents.

Average number of horses to each car, 7.

Average cost of maintaining each car per day, including wear and tear, feed, salaries, depreciation of property, repairs of road, &c., 10 dols. 50 cents.

Average number of miles run by each car, 12,980 per annum.

Average number of passengers carried by each car, 50,120 per annum.

Average cost of carrying each passenger, 7⅝ cents.

Average cost of mile run, $29\frac{66}{100}$ cents.

Rate of speed, 8 miles per hour.

The total length of rail on this road is equal to that of a single track 9½ miles in length; the track is paved throughout.

THE METROPOLITAN RAILWAY COMPANY, BOSTON,

For the year ending, November 30, 1858.

	Dols. Cents.
Cost of construction and equipment, ...	444,984: 41
Total surplus for payment of dividends, ...	66,540: 77
Dividend of eight per cent. declared during the year,.. ..	32,152: 00
Present Surplus	34,388: 77

Average number of horses to each car, 12.

Gross average cost of maintaining each car per day, including wear and tear, 13 dols. 76 cents.

Average number of miles run in one year by each car, 16,965.

Average number of passengers carried in each car in one year, 102,844.

Average cost of carrying each passsnger, 4⅞ cents.

Average cost of mile run, 29½ cents.

Rate of speed, 5½ miles per hour.

The total length of rail on this road is equal to a single track of 12 miles—it is paved throughout.

MALDEN AND MELROSE RAILROAD, BOSTON,

For Eight months, ending November, 1858.

	Dols. Cents
Cost of construction and equipment, ...	242,548: 31

Average number of horses to each car, 8.
Average cost of maintaining each car per day, including wear and tear, repairs of road, &c., &c., 8 dols. 23 cents.
Number of miles run by each car in 8 months, 4,215.
Number of passengers carried by each car in 8 months, 41,369.
Average cost of carrying each passenger, $4\frac{83}{100}$ cents.
Average cost cost of mile run, 47 cents.
Rate of speed, 6 miles per hour.

The total length of rail on this road is equal to a single track of 12 miles—it is paved throughout.

MIDDLESEX RAILROAD,

This road is leased to the Malden and Melrose Company, who pay a semi-annual rental equal to eight per cent. per annum on each share of the capital stock of the Middlesex Railroad Company.

BROADWAY (HORSE) RAILROAD COMPANY, BOSTON.

This company has had a location granted to it by the Mayor and Aldermen of the City of Boston, and the railroad is under contract for building. A portion of the same is completed, and in operation. The company has bought no real estate, nor any equipment, and no returns have yet been made.

THE DORCHESTER RAILWAY COMPANY.

This company has purchased the corporate property of the Dorchester Avenue Railroad Company, and leased the road—the lessees have run the cars and the line of coaches connected therewith, on their own account, paying to this Corporation a rent equal to eight per cent. per annum on the amount of stock outstanding. * * * *

These statistics show that the business of street railways is of steadily increasing importance, and that the enterprise has been so far, unquestionably successful. The investments have yielded large and regularly paid dividends, even on amounts of capital charged to construction, which was partly consumed in the purchase of imaginary omnibus rights, and other expenses, amounting in total to nearly treble the actual cost for which roads without grading or bridging can now be built.—*Easton's Practical Treatise on Street or Horse Power Railways.*

The following letter from Oliver Eldridge, Esq., late Commander of the Collins' steam-ship "Atlantic," speaks of the successful operation of Horse Railways in Boston :—

Boston, December 30, 1859.

George Francis Train, Esq.,
Liverpool.

My Dear Sir,

Nothing would give me more pleasure than to send you the required statistics of our Horse Railways for the present year, but I cannot get them in time for this mail. Those of last year you have already.

You may, however, be assured of one thing, our Passenger Railways are proving of the greatest public benefit to our citizens as well as profitable to the shareholders.

In addition to the roads connecting Boston with Dorchester, Roxbury, Brooklyn, Jamaica Plain, Cambridge, Charleston, Watertown, and Waltham, a charter has been granted by the City Government, to extend the Metropolitan from the corner of Boylston and Washington-streets, down Washington to Cornhill, and back again up Tremont-street to its previous terminus. The Cambridge Road, from Bowdoin Square, will probably be extended to join the Metropolitan in Tremont-street.

Also, another road is under contemplation to Chelsea, and the branches to these different roads in due time will connect several of the country villages.

The stock is pretty well distributed through all classes, and you can see by reference to our Stock Exchange, how much it is appreciated.

So successful have been these roads, that we are all astonished that such a public convenience should have been so long delayed.

I have lately returned from St. Louis, Chicago and Cincinnati, and found that the Horse Railway already, was in full blast and as universally popular as in this city. To give you an idea of their popularity, I will mention that *Four and-a-half Millions of Passengers passed* over the Metropolitan Road last year. For public safety there is no such mode of conveyance known. An accident is so rare an occurrence, I remember but of two who were injured, and those through no fault of the Company.

During the summer months a water car goes over the track to lay the dust, a luxury never contemplated with the Omnibus.

The saving of taxes to the citizens on account of so much less wear and tear of Omnibuses is an important feature.

These roads are for the poor as well as the rich. The wealthy classes have their carriages and do not so much feel the want of them, but the working men find in this new system a comfort they never before realized.

The Jamaica Plain Road passes my own door, and having seen its construction from the first in the face of opposition, and now during the skating season seeing the cars crowded with old and young bound to Jamaica Pond for this winter recreation, many of which were among its opponents, I am convinced that the Horse Railway has only to be introduced in your European cities to meet with universal satisfaction.

Yours very truly,

OLIVER ELDRIDGE.

Although the Americans have seized the idea and are practically demonstrating it, by introducing Horse Railways into all their large cities as if it was a modern invention, I find, that there is nothing new after all in the system, except its application for passengers. A century ago tramways were used in England.

Cæsar's military roads from hill to hill, still mark the Roman's track. First, pack horses transported the products of the land from place to place. Even a hundred years ago, this was the custom in Scotland; in fact, in some places in the Highlands, and in some of the hilly parts of Wales, it is the practice of to-day. Wooden sledges drawn by horses succeeded. Then wheel carriages,—afterwards wooden tramways, and last came, what the Egyptians used in the age of the pyramids, and the Chinese during the Christian era, canals; (the first in England was made in 1756). The Asiatic practice of laying down timber in bad roads most likely introduced the wooden rail. Down to the Elizabethian age, coals from Newcastle were taken in carts or on paniers to the sea. Wooden railways were introduced previous to 1649, but Easton says:—

The earliest account given of the use of tramways, dates as far back as 1670, when, on the introduction of coal as a substitute for wood fuel, great difficulties were experienced in its transportation from the mines to the ships, which was done in rude carts, over rough roads, involving serious expenditures to the proprietors of the mines, who necessarily employed several hundred horses and carts for this traffic. The importance of adopting some plan of reducing the consequent expense, occupied the attention of those interested, and, after serious consideration, the result was the construction of wooden tramways, consisting of straight pieces of timber imbedded longitudinally in the roadway without cross ties.

These were found to be so advantageous that they were at once adopted throughout the mining districts; there construction, as improved, has been thus described:—

Some attention appears to have been given to the locations, as considerable deviations from direct lines were made to avoid inequalities of the ground, and consequent expenditure for graduation; the road-bed being levelled, cross ties of large logs of wood, cut into lengths to correspond with the width of the road, were laid across at short distances, and firmly imbedded, to support the longitudinal pieces of timber which were connected end to end over the cross ties, and to which they were nailed or otherwise secured. These timbers or rails becoming constantly broken or rapidly worn away by the continued friction of the wheels, other smaller pieces of timber were laid over the dilapidated portions, which eventually led to the introduction of a double sleeper throughout the whole line. The roadway was generally about six feet wide, the cross ties were laid two feet apart; the under rail was first laid with oak, but afterwards of pine fir, about six feet long, five inches broad by four or five inches in depth; the upper rail was of the same dimensions, and generally of beech or plane tree; the under rail being properly secured to the cross ties, the road was ballasted with ashes or other material, packed firmly to the surface of the rail, upon which the upper rail was then placed and firmly secured by wooden pins.

The wagons resembled somewhat the coal cars now in use, the wheels were of wood, and very low. Three tons was the general load to each horse. The passage of the wagons over the steep declivities or "runs," was regulated by rude brakes, the management of which, depending upon the dexterity of the wagoners, often produced very fatal results.

The substitution of iron rails for wood, which enabled the horse to haul double his previous load, was introduced about the year 1767, at the iron works of Colebrook Dale. It is said, that the price of iron becoming very low, and the works of this company being of great extent, the pig iron, instead of being stacked, was laid upon the wooden rails, on the supposition that the saving in repair of the rails would help to pay the interest, until the price of iron should rise, when it could be easily taken up and sent away as pig iron. These pieces of iron were about five feet long, four inches broad, and one inch and a quarter thick, with three holes by which they were fastened to the rails. The introduction of the iron rail so reduced the resistance in descending inclined planes that the brake was ineffectual in counteracting the force of gravity, and recourse was had to other modes of restraining the velocity of the wagons, which resulted in the employment of the surplus gravity of the load descending one plane to drag the empty ones up the ascending plane.

The next improvement was the introduction, about the year 1776, of the cast iron tram plates with an upright ledge; since then the subject has so occupied the ingenuity of mechanics and engineers that a great variety of patterns for iron rails have been patented and introduced; of the more modern and useful ones notice will hereafter be taken.

In the year 1825, the Stockton and Darlington Railway was opened; animal power was principally employed, and the community was surprised at the wonderful superiority of railroads over the best of common roads; as a carriage containing twenty-six persons, with their proportion of baggage, was drawn by a single horse at the rate of six miles per hour, with comparatively little exertion.

Two tons were a good load for one horse on the wooden rail. This is now about the weight of the passenger car. In 1738, cast iron rails succeeded wood. In 1752 iron wheels were made, but the carriages were not linked together till 1763. Six tons of rails were made by the Colebrook Dale Company for their tramway, on the 13th of November, of that year. In 1805, malleable rails were made at Wall-bottle Colliery, Newcastle-upon-Tyne. After horse power, came steam.

Savery reduced to practice in 1663 the Marquis of Worcester s suggestion, in the "Century of Inventions." Newcomen made improvements in 1707. The cylinder and piston high-pressure engine came in 1720. These engines were used to pump water, but Dr. Robertson suggested to Watt, in 1759, the idea of making steam move wheel carriages. The "Surrey Iron Railway

Company,"* in 1801, was the first railway act passed in the Kingdom. In the year that Wellington and Napoleon were born, 1769, Hornblower introduced his patent. In 1782, Murdock made his model engine. Trevithick and Vivian, in 1802, reduced theory to practice, and obtained a patent for propelling by steam. The first trial was on common roads. Thousands saw the experiment where the Euston Square station now stands. Woolf made improvements in 1804, but George Stephenson, just before the battle of Waterloo, invented the steam-blast which was the life-blood of the steam-engine. Five hundred pounds premium was offered in April, 1829, by the Directors of the London and Manchester Railroad, for the best locomotive engine, to draw three times its own weight over a level plain ten miles an hour, weight not to exceed six tons, to cost not over five hundred and fifty pounds. October 6, 1829, was the first-trial day, and imagine the sensation produced by the engine running twenty-eight miles an hour ! The last day of that year, the first railway in England was opened for passengers. On the 4th December, 1830, Stephenson's engine, the "Planet," took one hundred and thirty-five bales of cotton to Manchester. Thirty years later there were ten thousand miles in England, and in America five thousand miles more of railway in active operation than is necessary to circumnavigate the globe!

This rapid glance from Roman days to our time, gives each stepping-stone from pack-horses to locomotives.

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* From 1801 to 1825,	55	acts were passed.			
„ 1826 to 1835,	95	„	authorizing	927	miles.
„ 1836 to 1843,	153	„	„	1,717	„
„ 1844 to 1847.	641	„	„	9,837	„
Say, since the commencement of the century	944	acts	authorising	12,481	„

Then came the age of Panic, of Finance and of Gold—Panic among the Railways—Famine among the Irish—Gold among the Californians.

The Horse Railway is an English invention of years ago. The Americans, however, are first to apply it to any extent to cities.

It is a singular fact, that the first locomotive railway in Scotland (from Paisley to Renfrew, three miles) is now the first Horse Railway.

The railway along the Liverpool Docks, about five miles, constructed for the transportation of timber, has recently been used by Messrs. Busby and Co., and Gates and Dolby, for passengers. The omnibus has a movable flange on the fore wheels, worked by rubber springs, which permits the driver to go on and off the track, in case of obstruction.

The Dock Committee made no charge at first, but now that the new system is said to prove so profitable, they exact one shilling each journey, which, as there are seven omnibusses, and they make seven journeys in winter and eight in summer each day, the Dock Board would realize a revenue of nearly a thousand a-year. The omnibus companies, however, withdrew on the 28th January, on account of this charge. The omnibuses are not made on the American plan. Their weight is about two and a-half tons, and, save the flange, are only an enlarged edition of the old system. They carry eighteen inside, at threepence; and twenty-two out, at two-pence.

This commencement of the Passenger Railway has met with general satisfaction; and the field being now open, the writer of this has applied to the Dock Committee to occupy the rail on the terms stated, as a preliminary step towards the introduction of the American system into Liverpool.

Captain DOUGLAS GALTON, R.E., says in his official report to Parliament, in 1857:—

> The encouragement of the use of rails on roads and streets, to facilitate the distribution of goods traffic as well as to accommodate local passenger traffic, would prove very useful in many towns where the streets are broad, instead of throwing every impediment in the way of thus extending the advantages of railways.

How different is the testimony of the Hon. Grantley Berkeley M.P., who has just returned from the United States :—

> The street rails (he writes in his second letter to the *Field*) which are laid down for one particular class of these cumbrous omnibuses, are the greatest eye-sore and objection to other travel that can possibly exist.
>
> Thank Heaven, London is not yet grown so tyranically democratic as to tolerate such an incubus on the locomotive freedom of the world.

As the honourable gentleman has thus far seen nothing to admire in the New World, and ridicules everything American alike, I am not surprised to see the above comments on the street railways of New York.

Mr. Scholefield, M.P., agreed with Captain Galton in commending them, as just the thing for large cities. Ask Mr. Cobden's opinion —he is a practical man and has seen a practical demonstration of their desirability.

Whether or not, the Horse Railway, or some such relief is needed in the streets of London, I will let the *Times*, of Dec. 3, 1858, respond to Mr. Berkeley.

> The problem is simple and most pressing. It is, how are we to get about this huge, crowded, still increasing, still multiplying Metropolis? There is a congestion at the vitals. Lungs, heart, and head are gorged, and cannot perform their functions. At any hour between ten and five, you are pretty sure to find some part of our main thoroughfare a solid pack of vehicles, unable to move one way or the other, and full of unfortunates who would give anything to reach their destination. They have to catch a train, or keep an appointment, or do a world of business in an hour. They have to see a lawyer, or a broker, or a friend who may just then be at home. They look at their watches, they crane out of the windows of cab or 'bus, they mutter savagely, they remonstrate. All in vain. As they press towards the City there looms through the fog the dark arch of Temple-bar. Before them is an endless train of omnibuses, light carts, heavy vans, brewers' waggons, Hansoms, "four-wheelers," trucks, some turned this way, some that, all indissolubly locked. Laocoon and his sons could not be more encoiled. At length there is a slight movement. The icefield shifts. They advance a few yards, and then another dead lock. They are released only to be shunted up

some siding. The pavement is up, and the busy stream of life has to perform a circuit in bystreets. Ten times a-day is there such a lock at the Farringdon-street crossing, again on Ludgate-hill, again at the Poultry, again at the further end of Cornhill, in Fenchurch-street, and a dozen other narrow straits or confluent Maelstroms. Many a precious hour is lost and many a good temper permanently injured in these fatal defiles. There are few entreaties so little attended to as the *Siste, Viator,* with which the past generation fondly besought us to linger over their virtues or their misfortunes. The command is here enforced with the rod of a magician. A dozen times a-day the traffic of this great City is turned to stone. At the hour of noon, the high tide of life and work, the provincial visitors in the Fleet-street "family hotel" become conscious of unwonted quiet. They can hear one another speak. They can even collect their thoughts and fancy themselves in their own parlours. After twenty minutes or so it suddenly occurs to them as rather strange that the streets should be empty at such an hour. They look out, and as far as eyes can see east and west is a triple row of vehicles of all sorts as dead still as the carriages at a coachmaker's. They look in amazement; but let them not look too long or allow their eyes to rest on a near object. The outsiders of a "'bus" are not in the pleasantest mood for telegraphic communication at such a moment.

* * *

Street railways, of which we have abundant examples in the United States and even on this side, are become a necessity in London. There is the long loaded, continuous train already. You see a dozen "'buses," each carrying near thirty people, drawn by two horses, and managed by two men, toiling along, as near as movement will allow. Link them, place rails under the wheels, and put the power at front, instead of diffusing it between the several links and the problem is solved. The egg is set on end. The rail should be laid in the middle of the street with stations at the chief crossings, while the lighter traffic, and all that had to stop in the intervals would naturally take the side. Wherever the street is not wide enough for this purpose it ought to be widened. There might be difficulties, such as those from the cross traffic, but so there are now. It takes the continual exertions of an army of policemen to keep order and prevent serious collisions. Nobody expects to cross so great a stream of traffic without some delay, and there need not be more even with street railways. There have been various proposals for subterranean railways and aërial railways;—they can be tried should surface railways be found not to answer their purpose, which we do not expect. The simpler course is the most promising, and it has not yet been tried.

Great care should be taken in laying down the first rails in England so as to do away with all prejudice. Some of the early experiments in America were most expensive.

The want of science (says *The Treatise on Horse Railways*) and actual practice which has been exhibited in many of these undertakings, and the fruitless attempts at imitation, without a just comprehension of the original nature of the plan, have invariably resulted in injury to the road, a tax on the public, and a derangement of the finances of the company. * * *

Under an ordinance of the City Council of Philadelphia, all iron rails laid in the streets must be of the same pattern and the guage of track five feet two inches, the space between the wheels of ordinary vehicles. Under this arrangement the broad tramway of the rail provides a smooth iron surface for the wheels of carriages, wagons, drays, &c., and accomplishes the advantages of concentrating the travel, relieving the streets of the noise occasioned by the rattling of heavily laden vehicles over the rough stones, economizing a heavy annual expense for repairing streets; and by accommodating all classes of the community, the early prejudice and opposition are gradually being forgotten. * * * *

The improvements recently introduced in the construction of the railway overcome all the obstacles which formerly existed, and there is not an argument that can be urged against the system which cannot be satisfactorily combated by any one conversant with its practical operation. The increase of business caused by increased facilities for travelling, increases the number of employees required; and the magnificent scale upon which these establishments may be conducted in Paris or London, would provide employment for thousands of officials, clerks, conductors, mechanics, drivers, overseers, stable-men, &c., and produce to the Government a revenue which will appear surprising and incredible.

The foregoing opinions of engineers, members of Parliament, and capitalists, endorsed by those journals who have made themselves acquainted with the practical utility of the City Passenger Railway, may prove of service to those whose prejudices may have arisen through want of knowledge of the subject.

The advantages of the Horse Railway may be thus summed up:

1. Each railway car displaces two omnibuses and four horses, thus relieving the street of one of the main causes of the oft recurring lock-ups.

2. The wear and tear from these omnibuses being transferred to the rail, as well as that of many other vehicles that prefer the smooth surface of the iron to the uneven stone pavement, the rate-payers save a large per centage in Taxes.

3. The Gas and Water Commissioners are not inconvenienced when making repairs, as the rails are laid on longitudinal sleepers which can be diverted in case of need; and as these cars as well as the carts and carriages that take the rail, move on a direct line, it is a self-constituted police system saving confusion without expense to the public.

4. The cars move one third faster than the omnibus, and so gentle is the motion, the passenger can read his journal without difficulty.

5. The rails are so constructed, that no inconvenience arises at crossings from wrenching off carriage wheels, and as the improved rail is nearly flat, even with the surface, and some five inches wide, no grooves impede the general traffic, and the gauge admits all vehicles that prefer the track to the pavement.

6. The facility of getting in and out at each end of the car, and on each side, giving the passenger the choice of four places (see plate), together with the almost instantaneous stoppage by means of the patent brake, permits passengers to step in or out when in motion, without danger, instanced by the fact, that nearly *thirty-five millions of passengers passed over the New York and Brooklyn roads last year, with only twelve accidents!*

7. In case of necessity, troops can be transported from one part of the city to the other, at ten miles an hour.

8. It is a special boon to the working man who, often in America, saves threepence beer-money, to buy a ticket from his work in the city to his cottage in the suburbs.

In short, the Horse Railway is as much a necessity as gas, sewerage, the steam rail, or the electric telegraph, and I challenge any one to refute the arguments in its favour herein advanced. Once introduced, you would miss the passenger-car as much as any great public benefit. You ride for a less price—in less time—with less noise—less confusion—less accidents—with the additional luxury—of more room—more attention—more comfort—more light—and better ventilation.

NOTE.—As practical evidence is preferable to theoretical explanation, I have had manufactured two model cars with sleepers and rails, which will show the principle in operation—one from Philadelphia, the other from New York—in order to give the style used in the respective cities, which will be on exhibition at the office of JAMES SAMUEL, ESQ., C.E., 26, Great George-street, Westminster, London, S.W., where statistics and every information required on the subject of Horse Railways may be obtained by members of Parliament or others interested. Several capitalists of Boston, New York, and Philadelphia, who have been connected with the American Horse Railways from the first, are interested with the author of this pamphlet in introducing the system into Europe, and, he is prepared, at his own expense, to lay down a rail in any street where the concession will be granted, in order to give an ocular proof of its public utility.

Communications to the above address will be duly forwarded.

Printed by Griffin and McGhie, 19, *South John-street, Liverpool.*

OPINIONS OF THE LIVERPOOL PRESS

From the Liverpool Post, February 3, 1860.

SPEED IN OUR STREETS.—The older the world gets the faster it goes. Extensive locomotion is a consequence of extreme civilisation. Lords and ladies move slowly, but every body else goes fast, and so much the better for lords and ladies. A hundred years ago one coach ran between Liverpool and London, and it took three days to perform the journey either way. The mail coach was a great improvement; but the railway carriage was perfection. The omnibus was born of the railroad system; but from attending at first at the stations, they in time contrived to carry passengers in the streets. A great good they were, but we are now told their day is past, and that they must give way to railway carriages on street railways. The present vehicle is too slow, and not large enough.

We are told that things that are new should be proposed as things forgotten; but it frequently turns out that the new things are only resuscitations of things very old. Railways are very old: the rails were stone, not iron, but the principle was the same. They are still to be seen running from the quarries of Egypt and Greece, and meet the eye on entering Pompeii. The old Duke of Bridgewater anticipated the present day when he expressed his dread of tramways superseding canals.

If you want to know how anything new ought to be done, see how they do it in America. Circumstances in that country made men inventive. Without an extraordinary aptitude for overcoming difficulties they never could have got on; and, in consequence of this aptitude becoming a second nature in them, they are going on still. They will never stop; their motto is, "Go ahead." The cradle is rocked and apples pealed by machinery, and at this moment we are franking the *Daily Post* by an American contrivance, and are to print it by another by and by. The last social improvement is street railways; and Mr. GEORGE FRANCIS TRAIN tells us, in a pamphlet just printed, that "the age of omnibuses in crowded cities has passed. That of horse railways has commenced. . . . . These street railways have been now for some time in use in New York, Brooklyn, Philadelphia, Boston, and other places, and new as their introduction has been, their success insures their extension. As might be expected, the carriages in running upon rails do not injure the pavement, while they relieve the thoroughfares from being crowded or blocked up. In New York the greater portion of drays, carts, 'buses, private carriages, occupy the rail, turning out only when the passenger car arrives, when they again take the track, as it is so much easier for the horses, and less wear and tear for the teams." Every improvement, however, has to encounter opposition; and as yet, though strongly recommended, the metropolis has not availed itself of street railways. But in Liverpool they have been introduced, without reference to railway carriages. Enterprising omnibus owners, however, did put omnibuses on the lines, and until this week they ran daily along the whole length of the docks, from north to south, with admitted convenience to the busy public on our quays. The Dock Board having laid a tax on each omnibus equal to £100 a year, the proprietors ceased to run them. Mr. TRAIN, as may be seen from the proceedings of the Board yesterday, offers to pay the tax, and run railway carriages on the rails. He is, we understand the representative of a large company, and the object is to introduce the American system into all our streets. In the true American fashion he gives reasons for what he proposes to do. . . . Why should not Mr. TRAIN be allowed the opportunity of showing what can be done?. He wants nothing but permission. Surely it will not be refused.

NEW RAILWAY OMNIBUSES AT THE DOCKS.

A letter from Mr. GEORGE FRANCIS TRAIN, addressed to the chairman, was next read as follows:—

"Dear Sir,—I observe that the charge for occupying the rails along the docks with omnibuses is one shilling a journey, or sixpence each trip, north and south; and noticing that the omnibus proprietors have withdrawn their buses on account of that charge, I hereby tender for the said service at the terms proposed. I ask for no other facilities than were accorded the late occupiers; and I can give you references as to my ability to accomplish the work as well. Any information required I shall be glad to give you in writing or in person, as you may direct."

The Chairman.—Mr. Train is a gentleman tolerably well known to most gentlemen of the committee. Perhaps this letter will be referred to the works committee, who may be glad to see him personally.

Mr. Laird supposed there could be no objection to treating with him, if he accepted the terms proposed.

The Chairman, after explaining the reasons why the late occupiers had withdrawn their omnibuses from the rails to the road, remarked that Mr. Train was a very intelligent man, and he said he should be glad to run omnibuses on the very terms alleged by the others to be too high.

Mr. Forwood hoped the whole question of affording encouragement to such a system would be considered, for in its development he could see great advantages to all.

From the *Liverpool Mercury, February* 3, 1860.

Horse Railways.—To practical business men, in a large commercial community like ours, omnibus tramways need only the recommendation of safe practicability. No thinking man, accustomed to the busy thoroughfares constituting the routes of the public conveyances to and from our out-townships and residential suburbs, has any doubt of the advantage to man and horse, passenger and pedestrian, that would be gained by taking our heavily loaded public vehicles from off the hard, uneven, boulder or square-set pavement, and the muddy or dusty macadamised road. As yet, only a limited portion of our population has had the opportunity of testing the difference between the jolting, clatter, and the delay of the common road and the pleasure and noiseless expedition of a horse railway, and for the present they are doomed to return to the vehicular *status quo*. Our enterprising townsmen, Messrs. Gates and Dolby, and the Messrs. Busby, availed themselves, by permission of the Mersey Docks Board, of the line of docks railway for their immense passenger traffic along the line of docks, and by degrees they improved upon the application (originally made by Mr. Curtis) of the ingenious moveable flange, which keeps the 'bus on the line and allows it to run off at pleasure. But the dock board imposed a charge—6d. a single journey—for the use of the line. This looks a little matter in itself; but Messrs. Gates and Dolby and Messrs. Busby have found it too serious. Suppose one omnibus make 20 single or 10 double journeys in a day: the dock board's charge amounts to 10s. a day, or £182 a-year - rather a large deduction from the earnings of one 'bus. The proprietors say they cannot afford to pay it during the present slack season. They have remonstrated, without making any specific offer to the dock board, who will propose no alteration in the terms; and therefore the two firms withdraw their new omnibuses and replace them by the old ones—the re-appearance of which will be anything but agreeable to those who are compelled to use them. But, whilst they are driven to this extremity with the dock board on one hand, and on the other hand Messrs. Busby are applying to the town council for permission to lay down rails from the top of Lord-street to the Old Swan, Mr. George Francis Train, the agent of several American capitalists who seek to introduce the American system of horse railways into Europe, is in the town and has actually made an offer to the dock board to take their line of railway on the terms upon which the local proprietors have refused to retain it. Of course, with this offer before them, the dock board can afford to disregard the local proprietors for the present; and perhaps it may be the board's duty, as a public body, bound to consult general convenience and their corporate interests, to let Mr. Train run his horse train on the dock railways. Under any circumstances, this complication of matters—the suspension of the comfort and convenience temporarily afforded to one part of the community, and the proposal to render the daily journeys of another portion of the population more pleasant, expeditious and safe—will create a more general interest than has hitherto been felt in the question of the road *versus* the rail. Mr. Train has sent us a pamphlet which is a compilation of opinions and statistics, the results of experience, in which he sums up the advantages of the new system in the following terms:— . . . . We find that Mr. Train alludes to the Liverpool experiment. He says there seven omnibuses, which make seven journeys in winter and eight in summer each day, and therefore the board would realise, on the terms that have been paid, a revenue of nearly £1000 a-year. The horse railway, he remarks, is an invention of years ago; but the Americans were the first to apply it to any extent in cities; and it is a singular fact that the first locomotive railway in Scotland (from Paisley to Renfrew, three miles) is now the first horse railway.

Competition between Mr. Train and his friends, and Messrs. Gates and Dolby, and the Messrs. Busby, involves nothing in itself which can be objected to, so long as their is sufficient regard to public convenience and personal safety; but it is a question whether the interests of the public would be compromised if any private persons were allowed to lay down railways in our streets. This may lead to "vested interests" and monopolies, always difficult to deal with. If the experiment is to be tried, ought not the railway to belong to the town council, who would let them out to competing omnibus proprietors on the best terms that were compatable with efficient and safe service, and under restrictions rendering the lessees amenable to the criticism and control of the public through their representatives?

From the *Northern Times*, February 4, 1860.

Street Railways.—That the Americans have got considerably a-head of us in the means and appliances of locomotion, whether by land or water, every one who has visited the United States must be well convinced; and in nothing, perhaps, is their superiority in this respect more conspicuous, than in the excellent substitute they have provided for the cumbrous and inconvenient omnibus in crowded cities, by their Street Railways. These Railways are provided with spacious and commodious cars, which are drawn by horses—or by mules—and they afford an amount of accommodation for passenger-traffic, which no extent of omnibus provision that our streets could contain would ever be able to furnish. The lines, of course. extend to, and often beyond, the suburbs—just as the routes of our omnibuses do; —and the facilities they afford for people moving about in all directions, conveniently and economically, far exceed anything that we can yet boast of in this country. . . . . The slightest thought, indeed, must satisfy any one of their great utility,—of their vast superiority over omnibuses,—of their being, in short, a public convenience which every populous town would find it advantageous to adopt. These advantages, however, require to be witnessed in order to be fully appreciated; and Englishmen who have experienced them, in the American cities, are generally struck with them as presenting one of the greatest improvements in locomotion, for urban and suburban purposes. of this improving age. Through the enterprise of an American gentleman, well known in Liverpool, it seems we are about to have this great improvement introduced here. Mr. G. F. Train has not only published an interesting pamphlet on the subject, with a copy of which he has kindly favoured us, but he has himself offered to undertake the experiment upon the rails of the Dock Company, along the line of Docks. . . . . But Mr. Train is not alone in this movement. The Messrs. Busby, the extensive omnibus proprietors, have applied to the Town Council for permission to lay down rails from the top of Lord-street to Old Swan, a distance of three miles into the suburbs. Let us hope, then, that the subject will meet with the careful attention it deserves. As Mr. Forward so well observed at the

Dock Board on Thursday,—"He hoped the reference to the Works Committee would not be upon the simple question of the rate to be charged. The question should be fairly looked at. In other countries millions of passengers passed over these iron roads, and in this town no doubt it would be a great public convenience, both as respected goods and passenger traffic. He did not see how they were to work the immense traffic upon the road up to the Canada Dock without the adoption of this principle of carriage. He hoped the whole question would be considered by the Works Committee, not merely with a view to imposing a tax, but with a view also to affording every facility for conducting the immense traffic on the line of docks." This as regards the route along the line of docks. It is the right spirit in which to consider the question; and let us hope the Town Council will take it up in that spirit, as well as the Dock Board.

From the *Liverpool Mail*, February 4, 1860.

STREET TRAMWAYS.—Mr. GEORGE FRANCIS TRAIN, our extremely "fast" Yankee cousin, famous for making galloping speeches, writing galloping books, and galloping himself round the world—one while in Massachusetts, and presto in Melbourne, then turning up at Calcutta and next contemplating a run through China—has revisited Liverpool, and has just published a characteristic pamphlet, entitled,—"*Observations on Horse Railways.*"

His pamphlet brings into one focus the chief arguments which, for the last two years, have been urged by *The Times* as well as by scientific journals and embryo companies, in favour of tramways worked by horse-power, advocating them as a great means of expediting and easing omnibus traffic through the wider streets of great cities; and particularly in London and Dublin. Its promised boons are increased speed, reduced fares, smoother movement, superior safety, and less road repairing for the parish to defray. And it fortifies its proposals for their general adoption throughout the greater cities and towns of the United Kingdom by American schedules and returns, showing their useful and profitable and generally successful working in the principal cities of America.

Observant Englishmen, however, who have witnessed their actual working in American cities, pronounce very opposite opinions on their general utility, We believe that Mr. Braithwaite Poole, who recently returned from a tour through the States, is strongly impressed with the extreme desirability of bringing omnibus tramways into town use here: whilst the Hon. Grantley Berkley, still more recent visitor, in his second letter to the *Field*, deprecates them as "tyrannically democratic," and "an incubus on the locomotive freedom of the world." Yet, so far as the experiment of large omnibuses traversing the line of tramway along our docks has been tried, there is no gainsaying that their smooth and comparatively noiseless motion renders them very popular with the masses, who naturally prefer them to the crowding and rumbling of the smaller street busses. Notoriously, it will be a public disappointment to many of the humbler classes if the late proprietors of the dock railway omnibusses, or in their default if another party Mr. TRAIN himself whose name and nation alike guarantee his working the line with energy, and who has formally tendered to work it, should not be able to propose terms to the Mersey Docks Board, sufficiently reasonable and satisfactory to secure the use of the dock tramways all the year round. Indeed, so popular are these tramway omnibuses already, that an extensive firm of omnibus proprietors, the Messrs. Busby, have just made formal application for permission to lay down, of course at their own expense, a line of iron tramways for their busses to start from the top of Lord-street and follow the usual route to the Old Swan. . . . . Now, remembering that American "capitalists" are rarely philanthropists, we are somewhat puzzled to comprehend Brother Jonathan's affectionate anxiety to extend this "improvement" for John Bull's especial benefit. Are we to have an American railroad omnibus company in Liverpool, just as there was a French omnibus company in London? Or have these "capitalists" some private interest in any patented break for tramways? Or is it merely a proposed exchange of compliments, a kind of national return-visit, to evince a readiness for "mutual investments," seeing that another pamphleteer has the hardihood to urge English greenhorns to dip deeper into "American Investments," at the very time poor Cobden is said to have lost his whole "Seventy Thousand" in American railroads? However all this may be, it is rather funny that Yankee speculators should be so eager to instruct us in a facile plan of Home Railway locomotion which was first originated, and is still in daily use, in various parts of the United Kingdom. Within the last twenty years, we have had occasion to travel by various English, Scotch, and Welsh tramways, including each of those instanced by Mr. TRAIN; and we have long been convinced of their great advantages, particularly for suburban and hilly districts—provided always that obvious improvements were made both in the rail and in the carriage. Returning from Loch Katrine on the day the "Australian" grounded and stopped all the traffic of the Clyde, we had no means of getting from Bowling to Greenock, except *via* the Renfrew tramway to Paisley; and it was almost marvellous to find a huge and rude machine crowded inside and out, and with which, after the railway porters had once pushed it into motion, a single horse trotted off for three miles, apparently with much more ease than four horses would have drawn it on a common pavement. Only lately, too, we were much pleased to notice at Carnarvon smart first-class and second-class carriages in miniature, which (from the popularity of the tramway with the farmers and market people) have now superceded the lumbering open vehicles, little better than rough slate-waggons, which tourists will recollect as formerly in use for visiting the wild vale and quarries of Nantille. Judging, moreover, from the great saving of horse-power already effected by simply introducing into Water-street and other steep inclines those lines of *flagged wheelways* which have long been in vogue even for dead levels in great Continental cities,—we are inclined to think that iron tramways would also be found extremely facile and useful within the wider streets of our own town. But, whether single or double lines be used, we equally agree with "the leading journal" that they ought to run in the middle, and not at the sides of streets—American fashion Of course, any such scheme will have to conciliate divers interests—Gas and Water companies, and the Sewerage and Paving authorities. Nor will it fail to encounter strong opposition from all those who use their own carriages, or ride valuable horses, unless the general convenience of all classes be provided for, and all inconvenient monopoly of right of road guarded against. Mr. TRAIN's System seems to promise fair to embrace the improvements we have long desiderated. He says, "the *improved* rail is nearly flat, even "with the surface, and some five inches wide; *no groove impedes the general* "*traffic* and the guage admits *all* vehicles that prefer the track to the pave-"ment." But may *all* vehicles (except, perhaps, rival companies of railroad omnibuses) use the "track" free of charge? If so, and if there be no risk of wrenching off the wheels or the springs of light carriages, or of throwing down horses, then we should warmly hail this "improved tramway." Mr. TRAIN glowingly depicts many other and great advantages. We have quoted enough to show it offers fair for "getting along," and smoothly.

From the *Liverpool Chronicle, February* 4, 1860.

The local journals of yesterday are full of the new project propoundel by Mr. Train, an American gentleman, well known in Liverpool, the energy of whose character has earned for him the enviable soubriquet of the *express train.* Mr. Train is desirous of substituting railways in the principal thorougfares of the great towns for the present tardy and inefficient mode of conveyance by omnibuses and other vehicles, and the object of his pamphlet is to show the advantages which will accrue to the public by the change. . . . In a commercial point of view, these horse railways are declared to be highly remunerative, and the statistics of the second avenue railroad in New York seem to prove this assertion. The speed per hour is five miles, including stoppages, and it conveyed *four millions and a half* of passengers in one year, paying a dividend of six per cent., and not a single accident had occurred. Mr. Train also shows that the five city road railways in New York conveyed, during the year, nearly *thirty-five* millions of passengers! Some of these undertakings pay as much as *twelve* per cent. The following is the testimony of an English member of Parliament, Mr. Scholefield. . . If this system can be introduced into Liverpool with the same success which appears to have attended it in New York it will be a real blessing to the inhabitants, for the crowded state of our thoroughfares, as we have often had occasion to show in these columns, is a positive evil—a crying nuisance, which "has increased, is increasing, and must be diminished." Mr. Train is the representative of an influential Transatlantic Company, who seek for a return on their capital by the introduction into this country and the States of the Continent of the new system. On Thursday, Mr. Train made an application to the Mersey Board for the use of its railway along the Docks, and his application was referred to the Works' Committee consideration, the chairman of the Board, Mr. Charles Turner, paying at the same time a handsome tribute to Mr. Train's personal respectability and talent. It is a singular fact that, only the week before Mr. Train came before the Liverpool public with this proposition, the very dock railway which the American speculator now requires for testing his principle was abandoned, by two local omnibus proprietors, on the ground that they found the charge by the Dock Board for the use of the line —sixpence each way—unremunerative. If the transatlantic energy which Mr. Train possesses does not open the eyes of these 'bus proprietors we shall be greatly surprised. Considering the extent of the line of docks—not less than five miles between the south and the north—and the enormous floating population always on the move, here, if anywhere, the experiment ought to have answered. Either those who have abandoned the field which Mr. Train now occupies did not know how to work the business with advantage, or the habits of the people of New York and Liverpool differ very materially. If the benefits held out in Mr. Train's pamphlet are realised everybody will gain, but most of all, we hope, the enterprising speculator himself.

From the Liverpool Courier, February 4, 1860.

How are our Thoroughfares to be Improved?—A pamphlet, entitled "Observations on Horse Railways," by Mr. Train, addressed to the President of the Board of Trade, together with a personal acquaintance with the system as largely developed in the United States, and its great importance at the present time, bring this subject before our consideration. It is one which cannot be well considered without special reference to America, nor is it the least of the social questions of the day. In this transition period, between small things and great, between the old stage coach and the gigantic strides of steam, between the wooden vessel and the full-powered steamship, between the street omnibus and the horse railway car passing along the crowded thoroughfare, we do not look on it as an innovation, but as one of the necessities of the times. Few things strike the Englishman more when he land- on American soil, than the progress of the people in the means of locomotion By land and by water the types are distinct, but the idea is the same. Our purpose at present is with the land. And here at the outset you are impressed with the largeness of the idea. Space to be traversed safely, speedily, and profitably has been the thought; and though in details there are many things yet to be improved, the unity of the idea has been kept uppermost, and to a wonderful degree received development. Part of the idea has been to bring the media of communication home to the very doors of the travellers, into the very busiest quarters of the great cities. In the very centre of commerce, in New York, you may take your seat, and be either whisked off to 'the far west," or set down a few yards off upon the line. You may be